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The Ophthalmic record

..THE..

Ophthalmic Record.

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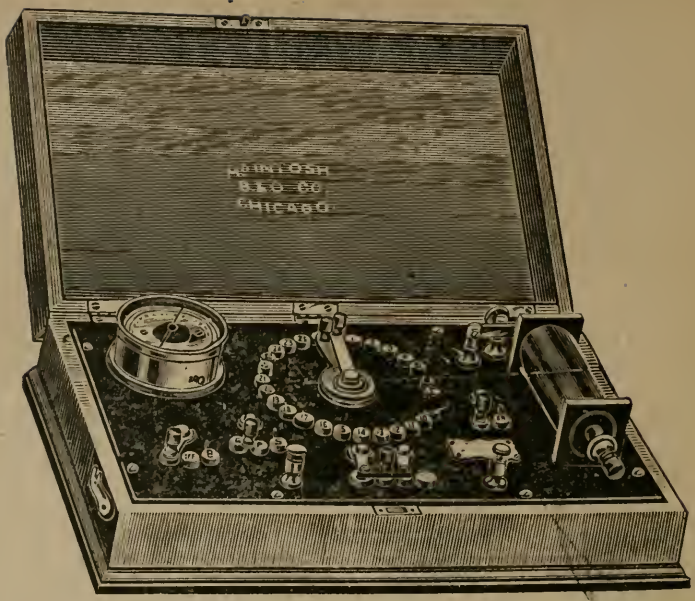

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THE
OPHTHALMIC RECORD.

VOL. IV. JUNE, 1895. No. 12.

A CASE OF CHOKED DISKS, THE RESULT OF CHRONIC CEREBRAL MENINGITIS, WITH AUTOPSY.

By DAVID WEBSTER, M.D., of New York.

Professor of Ophthalmology in the New York Polyclinic and in Dartmouth College; Surgeon to the Manhattan Eye and Ear Hospital.

R. J. S., aged 28, bachelor, plumber and gas-fitter, resident of New York, consulted me September 29th, 1883. He gave a history of malaria with chills and fever which "hung around him" for over a year, and which left him about the time his sight began to fail. His sight failed gradually, and he could see to read up to ten months ago. His mother had noticed a peculiarity in his walk for the last three months. He had a severe headache two days ago, but is not subject to headaches. He has had a great deal of dizziness. He never had venereal disease, and never was in the habit of drinking alcoholic stimulants. He has used tobacco moderately for twelve years, by smoking and chewing. Now, he does not chew at all, and smokes only two pipes a day.

Soon after he began to lose his sight, his family physician sent him across the ocean. He consulted Mr. Nettleship, in London, who made a diagnosis of optic neuritis from lead poisoning, and put him upon iodide of potassium.

Vission $\frac{2}{200}$, each eye, not improved by glasses.

OPHTHALMOSCOPIC EXAMINATION: Choked disks. Disks swollen to $\frac{1}{2}$ or more, a "woolly" looking exudation ob-

scuring the discal margins and extending about a disk's diameter into the retina; arteries almost nothing; veins somewhat dilated; no retinal hemorrhages. His urine was examined by Dr. E. A. Maxwell, and kidney disease excluded. I was inclined to a diagnosis of intracranal tumor, and put him upon mercurial inunction.

October 2nd. By artificial light, vision $\frac{2}{10}\frac{0}{0}$, each eye. He is color blind, calling green red, red magenta, blue yellow, etc.

An undated letter from his mother, received, I think, about two weeks later, describes his condition as follows:

"He was complaining of sore mouth and gums yesterday. I washed off the ointment. His face and head looked so much enlarged last night, and all day he was very quiet and would not converse at all. This morning, at four o'clock, he commenced reaching and vomiting. First, it looked like green water, afterwards, yellow, but so offensive that I could hardly bear to stand by him, and his head all enlarged and aching more after the reaching. He says it must split open."

November 3rd. The patient had no attacks of vomiting since that referred to in the above letter. He no longer complains of headache or dizziness.

Soon after the visit last noted, the patient went to New Jersey to live, and I saw him no more. The remaining portion of his history was communicated to me by a physician who omitted his signature, and whose name I have in vain endeavored to recall. His statement which I append is none the less interesting and valuable, however, as it completes the the history and furnishes us with the *true diagnosis*.

"I was called, on February 15, 1884, to see Robert J. S., who had been blind for over a year, and who gave the following history: He was a native of England. Eleven years ago he was sun struck and confined to his bed for one week, and part of the time he was delirious. From that time to his death he complained of headaches. At times, in working at his business,

on getting up suddenly, he would strike his head against beams. This always aggravated his headache. His head trouble gradually increased, and he noticed a gradual loss of sight, until he finally became totally blind. He placed himself under the care of an American physician, but was not benefitted. He went to England and consulted an Ophthalmologist of high standing, who pronounced his case one of optic neuritis, caused in all probability by lead poisoning. He returned to this country and consulted Drs. Agnew and Webster.

"He came under my care in the latter part of February, and presented the following symptoms: Total blindness, inability to walk, or even to stand without assistance, frequent and intense headaches, and a sense of great fullness in the head. His urine was scanty, high colored, and at times albuminous. His efforts at micturition consumed from ten to thirty minutes. His bowels, as a rule, were constipated. When first seen, and for some time afterwards, he was unable to carry on conversation, and when questions were addressed to him, he replied in monosyllables. On account of his blindness and loss of power of locomotion, I diagnosticated his case as one of chronic cerebral meningitis with pressure on, or inflammation of, the spinal cord. The treatment consisted of counter-irritation by cantharidal collodion applied to the back of the neck and sides of the spinal column as far down as the sacrum. Under the impression that there was an exudation of serum and lymph, I prescribed potassium iodide, and bichloride of mercury, but learning that he had been ptyalized without benefit, I abandoned the mercury and put him on increasing doses of potassium iodide. This was continued some time, when syrup of hydriodic acid (Gardner's) was substituted with apparent benefit. The galvanic battery was used, placing the positive pole on the back of the neck and passing the negative pole up and down the spine. For his partial paralysis of the bladder, I applied the positive pole of the galvanic battery along the spine, especially over the lum-

bar and lower dorsal regions, while the negative pole was applied over the vesical region, with the happy result of a complete disappearance of the paralysis. Strychnia was given to increase muscular tone. His symptoms gradually improved, and during the latter part of June he walked about four or five miles at a time. He experienced flashes of light and at times could distinguish his mother's face, trees, houses, animals, etc

"I saw him for the last time on July 16th, and was informed of his demise on the 25th of the same month. Two days before his death he was seized with a violent headache, nausea, and vomiting, followed by convulsions, coma, and death. The autopsy was held on the 26th, the day after his death, in the presence of three other physicians.

"*Autopsy.* Body well nourished, rigor mortis well marked, calvarium normal. There were several points of lymph in the vertex of the dura mater. no clot in longitudinal sinus, the convolutions were flattened from pressure within, and the surface of the brain was smooth. Beneath the points of exudation the dura mater was adherent and for a small space around On removing the brain, the pituitary body was torn off, and through a small opening thus made, serum poured out as from a fountain. On opening the ventricles they were found much distended by a large amount of very clear serum, estimated at from eight to ten fluid ounces. The lesions found satisfactorily account for all his symptoms, and mode of death. At the request of the family, no further examination of the body was made."

SCIENTIFIC PROCEEDINGS OF THE SECTION OF OPHTHALMOLOGY OF THE A.M.A., SAN FRANCISCO MEETING, 1894.

Papers in abstract, discussions in full.

SUB-CONJUNCTIVAL INJECTIONS IN THE TREATMENT OF EYE DISEASES.

By WM. ELLERY BRIGGS, M.D., Sacramento, Cal.

"*Sub-conjunctival Injections in Ocular Therapeutics.*—During the past four years Drs. Darier and Abadie, two very progressive Paris oculists, have been extensively using sub-conjunctival injections of mercuric chlorid solution in the treatment of many eye disaeses. As I watched their work in their large clinic, during the experimental stage of the method, I saw it tried in many diseases in which there was obviously little or no hope of benefit to be derived from any treatment. But from my observations I became convinced that good results were obtained in a certain class of cases. Since that time I have treated quite a number of cases by the method and have been led to the conclusion that many of them had done better than they would under other treatment alone.

"Most of the cases under my care have been of septic or syphilitic origin, so other treatments had been used in conjunction with the sub-conjunctival injections. * * * * *

"My conclusions may not be shared by many, but I believe that this method of treatment is a real advance and will establish a permanent place in ocular therapeutics. In Germany as well as in France a number of prominent oculists have reported very favorable results from the method, but I have been surprised that so little attention has been paid to it in this country. * * * * * * * *

"Dr. Darier injects two to five drops of a 1 to 1,000 sublimate

solution beneath the conjunctiva and not nearer than seven millimeters to the corneal border. If the injection is made too near the cornea the pain is likely to be severe. Care should be taken not to puncture a conjunctiva vessel or unpleasant ecchymosis will follow. In case this does unavoidably occur it will soon disappear under applications of hot water. The conjunctiva should be thoroughly anesthetized by cocain previous to treatment. It is hardly necessary to mention that the solutions and instruments used should be perfectly sterilized.

"In my practice I have generally employed three to five drops of a 1 to 2,000 bichlorid solution. The frequency of the injections should be regulated by the urgency of the case and the severity of the reaction. In a few cases they can be made daily for a few times, but in most cases not oftener than two or three times a week. Immediately after the injection a little bleb appears at the point the fluid enters. Frequently sharp pains are experienced for a couple of hours after the injections. This can be mostly relieved by cocain drops and hot or cold water. The position of the injection should vary to prevent excessive irritation—a point covered by one of the lids is most favorable.

"In years past patients suffering from local inflammations of septic origin were given mercury internally to counteract the septic process. I have no doubt that by administering bichlorid solution sub conjunctivally, in septic ocular disease, the same end can be attained with greater certainty and rapidity than by means of general medication. In nearly all cases the sub-conjunctival injection should be supplemented by other treatment appropriate to the case. The constitutional treatment is of the utmost importance in most affections of the uveal tract. The injections are frequently of the greatest benefit on account of the promptness by which the mercury can be made to reach the disease process. But the constitutional treatment is of quite as much importance in order to eradicate the constitutional disease upon which the local affection depends. * * *

"The cases in which I have found the method of treatment to do the most good are syphilitic diseases of the choroid and septic ulcers of the cornea. It seems usually to exert a salutary influence on most syphilitic processes of the uveal tract except in the acute stage of iritis. In some subacute, and late stages of acute, iritis I have had prompt improvement from the administration. It often seems to help in a marked manner cases of choroiditis of rheumatic origin, and in recent vitreous opacities from syphilitic retinitis good results may be expected. * * *

"Dr. Darier has laid down this rule, that in case improvement is not manifest by the tenth injection that we need not expect good from the method. This conforms to my experience, as we generally get perceptible improvement in from four to ten injections."

DISCUSSION.

THE CHAIRMAN—The method has not commended itself very strongly to my judgment and I have been slow about adopting it, but have noted this one interesting fact that it seemed very promptly to relieve pain especially in cases of keratitis, where pain has been very severe. I think that has been noted by every observer. It is a striking fact and one that seems rather anomalous that such effect should be produced without any apparent effect on the course of the disease.

DR. PISCHL—I wish to say that I tried it only in one case but the patient was so frightened by the swelling that I did not venture to continue it, and I am afraid that many patients will revolt against the injection.

DR. BRIGGS—Mr. Chairman, I have nothing particular to add. I am sorry that there is no more discussion on the subject. I think if Dr. Pischl tries it in cases of keratitis or some such trouble, he will continue to use it. My experience has been in certain cases quite favorable, and I am thoroughly convinced in my own mind, that it acted very beneficially in quite a number of cases. A number that I have tried it in found no benefit, but I have not found the severe reaction that Dr. Pischl mentioned, and I have no patients who revolted or objected seriously to the treatment.

PURULENT OPHTHALMIA AND ITS TREATMENT.

By X. C. SCOTT, M. D., of Cleveland, Ohio.

In speaking of purulent ophthalmia I embrace under the one name all forms of this disease as described in most text-books, under the name of purulent ophthalmia, gonorrheal ophthalmia and ophthalmia neonatorum. It has always been a mystery to me why authors persist in making this unnecessary division, unless it is to mystify the general practitioner or increase the number of pages in their books. It seems much more simple to designate all three forms of this disease under simply purulent ophthalmia or conjunctivitis blennorrhea, for the parts involved are the conjunctiva and subconjunctiva, with a serous effusion into their tissues and also into the stroma of the lids. The only difference that can be found is the presence of the gonococcus of Neisser in cases of gonorrhea, but these gonococci are not always present, and even their presence, I am unwilling to admit, renders the disease more dangerous if properly treated. Every one agrees that purulent conjunctivitis in any form is one of the most serious and dangerous diseases of the eye. I shared this opinion in common with others until within a few years, when I adopted a plan of treatment which has robbed this disease of all its terrors, whether it occurs in infancy, childhood or adult life, provided the cornea has not become dangerously complicated.

These cases have been cured within a week or ten days in every instance, instead of running, as the books say, a course of four or five weeks in the most favorable cases. It is not necessary for me to describe the ordinary course of a case of purulent ophthalmia, as you are all conversant with it. You well know the great source of danger is the corneal complication which may arise from the swollen chemotic condition of the conjunctiva, cutting off the blood supply for its necessary nutrition; 2, the swollen hot lids and the cornea being continually

bathed with pus causes a continual fomentation of the corneal tissue, and thus favors ulceration and destruction of this membrane; 3, the corrosive effects of the pus itself.

The great question that concerns us is how can we overcome or prevent these three important, dangerous and injurious factors which have caused such terrible havoc with so many eyes of mankind? By what treatment, or what is the best treatment, to cause these cases to run a short course, and with a favorable ending, without injury to the cornea?

You cannot open any text-book but that you will find advocated, that in the formative stage of this disease, the conjunctival sac should be frequently cleansed of pus, at the same time using some imaginary antiseptic, but that it is extremely dangerous to apply any astringent remedies; that cold applications should be made continually to the lids until the conjunctival membrane becomes soft and succulent. This cleanliness and these cold applications are proper and certainly indicated, but in many cases if you wait until the conjunctiva becomes soft and succulent before making any applications to the surface of this membrane, changes will have taken place in the corneal tissue which can not be controlled and may finally end in the destruction of the eye affected.

Instead of a do-nothing and an expectant plan, in addition to trying to have perfect cleanliness and cold applications made continuously, I commence the use of the following prescription from the very beginning:

℞ Hydrastia sulphatis.....grains 5 | 30
Acidi boraci.....grains 5 | 30
Sodii biboratis.....grains 5 | 30
Tinct. opii deodorat.....drachm ½ 2 |
Aquae distillata.....ounce 1 32 |
Mix and filter.

The attendant or nurse is instructed to cleanse the eyes every fifteen or twenty minutes day and night, by opening the lids and wiping away all the secretions possible; to make cold

applications to lids by means of compresses which have laid on ice and from four to six times a day with a long nozzled dropper and hot water to wash out all the pus held in the conjunctival sac under the lids, and afterwards to inject up and into the conjunctival sac of both the upper and lower lids an ordinary medicine dropper full of the above prescription. The nozzle of the dropper should be long and smooth and of sufficient length that it may be easily introduced without breaking under the upper lid.

The above mentioned solution seems to have a most beneficial influence on all acutely inflamed mucous membranes where there is a secretion of pus. I have used it in cases of other acutely inflamed mucous membranes with the same benign results and effects that have been experienced in the mucous membrane of the eye. When this solution is properly used in cases of purulent ophthalmia, there will be a marked improvement in the case within twenty-four hours, and within forty-eight hours there will be a remarkable diminution of the secretion of the pus, chemosis of the conjunctiva and swelling of the lids.

Once a day I turn the lids, and having cleansed away the pus, apply a 1 per cent. solution of nitrate of silver to the palpebral conjunctiva by means of a large camel's-hair brush. Now you may say that this is falling back on the old treatment, and that all the good comes from the employment of the silver salt. If this is true why did or do we not have the same benign results in the treatment of this disease from nitrate of silver, as it is the treatment recommended by all authorities as soon as the conjunctiva becomes succulent? I do not believe that the nitrate of silver has anything, to any great extent, to do with the aborting of the disease and the rapid diminution of the secretion of pus, but I use it for two reasons: 1, it is recommended by every author writing on this subject as the sovereign remedy to be relied on in the treatment of this disease, and if, perchance, by any mishap, an eye should be lost and a case

of malpractice should result, the first question to be asked would be: "How did you treat this eye?" and when it was discovered that no nitrate of silver had been used, as recommended by all authorities, the hue and cry would be raised that gross malpractice had been done, and that the eye had been treated in a way not recommended by any authority, consequently there would be a possibility of being mulcted for damages by an intelligent American jury; 2, I want to see my patient every day, and if something different is not done at each visit from that which the nurse did, many families not understanding the importance and danger threatened, would think there was no necessity for the physician visiting the patient so frequently, if the nurse could make all the necessary applications of medicine. In this connection allow me to enter my most earnest protest against either strong solutions or the mitigated stick of nitrate of silver ever being used in any disease of the conjunctiva. It always does more harm than good, and in cases of purulent ophthalmia may be the cause of starting corneal complications, which it is our great object to avoid. In cases where you are not called until the disease is well formed and the conjunctiva and lids are so swollen and edematous that they can not be opened it is imperative that the outer canthus should be divided, and I would recommend that you go even a step farther than simple division and divide the ligament (if I may call it such) which holds or binds the upper lid to the outer margin of the orbit, so that all constriction is removed and thus free the cornea from this danger. The bulbar conjunctivæ should also be incised to favor the flow of the serum and thus lessen the chemotic condition. When the case is seen at the very start, and before the lids and conjunctiva have become greatly chemosed and swollen, the above mentioned local medical treatment will cause the disease to abort in from three to five days, often within two or three days. In cases where the disease is in full blast with the conjunctiva and lids swollen, with a large

secretion of pus, unless the corneal membrane has become affected, all purulent discharge and swelling will disappear within a week. With this mode of treatment, as the disease abates, the conjunctiva presents an entirely different appearance from that which it presents under the ordinary manner of treatment, recommended in all our text-books. It becomes smooth and presents a normal appearance, like to what it was before the attack. Its mucous surface presents no velvety or villous appearance, with deep sulci between the swollen papillæ and folds of the membrane.

My experience and results with the treatment proposed have been so satisfactory that for several years past, when I have had a patient with one eye affected with purulent ophthalmia, I have not in any case taken the precaution to hermetically seal the well eye, nor have I in any case applied leeches, nor has the well eye become affected. The integument of the lids of the affected eye should be frequently dried and anointed with lanolin, or something similar, in order to prevent excoriations and irritation of their dermal surface.

By employing the treatment recommended in this paper you will find that, if sufficiently early employed, it will prevent chemosis of the conjunctiva and swelling of the lids if they have not already taken place. It will prevent the formation and secretion of pus, and avert dividing the outer commisure of the lids or incising the chemotic conjunctiva or applying leeches. In cases where the disease has reached the acme, with greatly chemosed conjunctiva, large quantities of pus secreted and swollen lids, if the cornea is still intact, I have never seen it become affected when this treatment has been followed; but on the other hand the chemosis of the conjunctiva, swelling of the lids and secretion of the pus have rapidly disappeared, leaving no impairment of the eye. In regard to the complication that may arise from the cornea becoming affected, it is only necessary to say that when this membrane does become affected the manner

of management and treatment is sufficiently described in all ophthalmic text-books and it would be a waste of time to repeat them.

Since Von Graefe's time, and because he recommended it, every writer writing a text-book has extolled the virtues of chlorinated water in the various forms and stages of this disease. After a faithful trial of it, in many cases, it has proved extremely unsatisfactory in my hands.

There is no doubt that many cases of purulent ophthalmia in the new-born child can be prevented by proper washing and cleanliness of the parturient tract before birth, and proper washing of the infant's eyes, before washing any other part of the body. I am prepared to go farther than this and say that with the care above mentioned of the mother and child, and a drop of this yellow solution instilled into the infant's eye three or four times daily for the first three or four days of its life, that there would be no more cases of purulent ophthalmia in new-born children, and our blind asylums would be deprived of twenty-five per cent. of their inmates, thus bringing untold blessings and happiness to these poor unfortunate ones who pass their lives in darkness, a burden to themselves and their friends. You may think that I am too much of an enthusiast for this treatment, and that it is impossible to obtain such wonderful results. To those who doubt and question that such an effect and results can be obtained, I can only say try it on your cases of purulent opathalmia, and you will become as strong a believer and as enthusiastic as I am. You will feel like publishing it from the housetops as a blessing, and a prevention of misery to our fellow-men.

DISCUSSION.

Dr. H. V. Wurdemann, Milwaukee—The result of any method of treatment depends upon the stage of the disease in which the same is used and the condition of the tissues. I consider the cleansing method of treatment, with very weak solutions of cor-

rosive sublimate or nitrate of silver, the most important. I can not conceive that in all cases it would be possible to obtain such flattering results as reported by Dr. Scott by any method of treatment. All cases may not be aborted as is evinced by the occurrence of ophthalmia in the hands of our most antiseptic accoucheurs: I call to mind several cases. I am inclined to take the middle ground, and while always endeavoring to protect myself in the family by explaining the fearful nature of the disease, I have never yet, in a comparatively large experience with this disease during the last few years, had a case go on to destruction, or injury of the cornea, where it has come into my hands at a sufficiently early date, before the ulceration of the cornea had ensued. Despite this, I do not forget the fact that cases have occurred and have been reportod by some of our foremost men, in which the child has been properly attended from the inception of the malady and yet has gone on to destruction. As has been noted, some of these patients are subjects of general cachexiæ, and such, as I have reason to note, are apt to prove intractable to any form of treatment. We should be a little careful in setting forth such rose-colored views of the question as have been advocated by the author of the paper, lest material injury be afforded some of us by the occurrence of one of these unfortunate cases. I, for one, can not say that I have ever seen a case "aborted" where the disease had so far advanced as to be recognized by the family or attending physician, and consultation called. Those of you having had experience in urethral therapeutics will agree with me when I say that after the first manifestations of gonorrhea have appeared, the disease is seldom or never aborted, although testimony to the contrary has been brought forward. Such is, however, not the general experience. The disease may be mitigated and its course shortened by treatment. I am pleased to see Dr. Scott makes no distinctions in purulent conjunctivitis of infancy; these are almost invariably gonorrheal in origin, and

are to be treated upon the lines laid down for that disease. We can not do away with nitrate of silver, which, used after suppuration has been well established, is of marked benefit. This may be applied by the physician or a trained nurse. I am particular about instructions to the attendant as regards thorough cleansing away of the pus. I consider that no hard instruments, such as droppers or brushes, should be given into unskilled hands during the course of this disease, for the slightest abrasion of the cornea means infection of that structure and probably irreparable damage. Soft pads of absorbent cotton soaked in the solutions and the latter dropped into the eye for cleansing, and atropin, when necessary, in the form of an ointment, are the least dangerous ways of applying the necessary medicaments. All manipulations by the attendant should be done with the utmost gentleness and thoroughness.

Dr. A. Barkan, San Francisco—I regret that Dr. Scott does not substantiate his statements with proper statistics. As he still continues the application of nitrate of silver, many of us will go on and think that that remedy is the mainly curative one. We all know the excellent effects of nitrate of silver in blennorrhea neonatorum. Why should not the same remedy act beneficially in purulent ophthalmia in the adult?

Dr. Starkey—I fear that I must come under the number spoken of by Dr. Scott, just at the close of his paper, who are skeptical as to the uniformly good results obtainable by any means, but shall gladly follow his injunction and try his method and hope to be convinced. My experience has been such in these cases, both in the new-born and in adults, that I can not take a very rosy view of the prospects of recovery in any case of purulent ophthalmia that comes under my care. It seems to me that, as was said in this Section last year, the only time in which purulent ophthalmia can be treated with universal success is before the disease occurs; when infection has actually occured, it seems to me that a certain proportion

of eyes will be lost by any treatment yet devised. Take a poorly nourished and perhaps premature infant with this disease—an infant that under any circumstances has all that he can possibly do to live—and the prognosis is exceedingly grave. We must all of us have seen such patients, with little discharge, easily controlled, also little swelling of the lids and little chemosis in which the cornea seemed to melt away from lack of nutrition. No pressure, no maceration with pus, and yet no nutrition. Now it seems to me that we should be very careful about asserting that all eyes with purulent ophthalmia can be preserved by this or that treatment. Such statements reach the public and may come up to confound us after we have had one of these unfortunate results.

Dr. Kaspar Pischl—May I call your attention to the publication of Prof. Burkhardt, of Berlin, who has a very extensive experience in purulent ophthalmia of young persons? He has discarded the application of ice and the use of strong solutions of nitrate of silver. He lays particular stress upon the removal of the gonococci from the conjunctival sac. For that purpose he instills into the inner corner of the eye, nitrate of silver 1 per cent. solution, and moves the lower lid rapidly up and down so that the fluid is thrown under the upper lid, and the cul-de-sac is thus thoroughly cleansed. This is repeated several times a day.

Dr. J. D. Ennis Arnold—The method of treating purulent ophthalmia, advanced by Dr. Scott, appears rather a step backward than a step in the advance; and yet I fancy we all feel inclined to make a trial of these medicaments, though the disease under consideration is one in which time lost in going after strange gods is likely to be fraught with dreadful consequences. The trend of modern treatment in all local disease is not the blind adoption of a fixed method, with increasing faith in the power of a medicament to correct or cure the disease, but rather the rational adoption of procedures that

have for their object the removal of material which we believe to be causative factors in producing the disease. In purulent ophthalmia we dare not destroy the living bacteria present, nor dare we even use substances able to prevent their multiplication, *in situ*.

By frequent cleansing all *materies morbi* must be removed from the conjunctival sac, and by punctilious vigilance we must stand always ready to prevent impairment of function by forestallment of tissue destruction. To-day there would be little excuse for him who would allow a corneal ulcer to penetrate spontaneously the anterior chamber, or for him who failed to relieve by section the pressure that threatened to produce tissue necrosis. The Crede method with the eyes of newborn children, is not a treatment of purulent ophthalmia, but an attempt, and nearly always a successful attempt, to prevent purulent ophthalmia.

Dr. Scott, in closing—Gentlemen, I am not surprised at the remarks made about this treatment. It is simply because you have not had any experience with it. The books say it is generally four or five weeks in the most typical cases. I have not lost a single case with it, if I got the case sufficiently early. It is miraculous how quickly the discharge disappears. I do not get any of the indications of the ordinary treatment. The conjunctiva is comparatively smooth. If you will try it, every one of you, you will be just as much an advocate of it as I am. I have taken ordinary cases of pure ophthalmia in the newborn child, and in four days had them perfectly well. I do not believe the nitrate of silver has anything to do with it. I know this has been used in gonorrhea where in three or four days it stopped entirely. There is not a particle of pain in its application. In my own individual case I have used it. I had a very severe attack in my head, an immense secretion of matter from the head and nose. I tried everything to control it until I used this solution, and in two doses it disappeared. It seems to be

antiseptic, to destroy the formation of pus, and to act beneficially upon the mucous membrane and secretion of pus. Try it thoroughly and you will be just as much an advocate of it as I am.

CONSERVATIVE TREATMENT OF WOUNDS OF THE EYE-BALL.

By LEWIS H. TAYLOR, M. D., Wilkes-Barre, Pa

I do not propose to weary the members of the Section by attempting to discuss the subject of wounds of the eye-ball in all of the phases which that subject might present, nor will I even enumerate the varieties and grades of these injuries, but will confine my remarks briefly to a consideration of some of the more serious forms, such as penetrating and lacerated wounds involving the iris and lens.

Living as some of us do, either in mining or manufacturing districts, we are frequently confronted with eye injuries of all grades, from the small cinder lodged upon the cornea, which in its effects is often-times by no means small, to the severe laceration of cornea, lens, iris and sclera.

The important question that at once arises is, to what extent shall I interfere with this eye? and how far dare I trust to the recuperative powers of nature to bring about a good result? We are taught in some text-books that if the iris is prolapsed, at once excise it. If the wound is a penetrating one and into or near the ciliary body, enucleate the ball in order to save the other. I cannot in all cases agree with these teachings. I have had a number of serious injuries to deal with, in which the iris was involved in the wound and let alone with as good results, or better, than in similar cases where an effort was made to remove the adherent portion. It is difficult to remove the portion of the iris entangled in a bruised or lacerated wound, by iridectomy, and unless seen very early after the accident our patients

will probably fare as well if the iris be left alone and allowed to heal over, fastened in the wound, as if we attempt its removal. I say, unless seen very early after the accident; I might say, if seen very early, the removal is not usually necessary, for it may often times be re-placed and freed from its entanglement in the wound.

* * * * * * * * *

Dr. H. Knapp, of New York, at a meeting of the American Ophthalmological Society in 1893, in discussing his paper on "Traumatic Dislocation of the Iris," says: "Now something about prolapse of the iris in eyes that have been injured. This is an exceedingly important matter, and I have made it a rule not to touch a prolapsed iris unless I could get it entirely fresh. I have never seen sympathetic ophthalmia where there was prolapsed iris which had not been wounded by the injury or by the surgeon's knife. If cases come in the first four or five hours, where a clean iridectomy could be made and I am sure that the foreign body was not an infecting one, then I make an iridectomy. If they come some time afterward, I leave the prolapse alone for it is very difficult to get at the lateral portions which will be incarcerated in the corners of the wound, and if operated on they are more apt to be followed by sympathetic ophthalmia or purulent infiltration than if left alone."

* * * * * * * * *

Dr. Noyes says: "The danger consequent upon prolapsus iridis increases with its extent and its nearness to the ciliary body. Traumatic prolapse is more dangerous than anterior synechiæ resulting from inflammation and perforation. A wound through the limbus and extending into the ciliary region demands abscission of all tissues which present." My own experience, however, inclines me to conservatism, and I strongly believe that a large number of these cases will do as well or better if the iris be replaced so far as it can be and let alone, as if we attempt to remove it.

DISCUSSION.

DR. BAKER.—Mr. Chairman, I am firmly of the opinion that many of us have removed eyes that might have been preserved. While the dangers of losing both eyes from sympathetic inflammation are very serious, I do not think that we should, upon first seeing an eye and recognizing that there is a very serious injury, decide on enucleation. During the past two years I have had two cases which illustrated this matter very forcibly. First, a boy about 12 years of age who had gone to one of the rod mills in the city. The iron rods, as thick as your finger, come out of these mills and shoot very rapidly forty or fifty feet across the room. One of these rods struck this boy in the eye, making a large opening in the lower part of the cornea through the sclerotic, so large that your finger could be very easily passed through this opening. Almost one-half of the circumference of the globe seemed to be torn open; the vitreous was protruding. I immediately proposed enucleation of the eye. The parents refused. I then put in a few stitches and brought the wound back as well as possible. To my surprise it healed and there was not a particle of reaction from it. I used eserin instead of atropia. The case went on to uninterrupted recovery and though the field was contracted the vision was almost perfect, that is, he could read something like twenty or thirty feet, but the field of vision was contracted. I have watched this case since and have seen no bad results following.

A few months since a patient came to me for enucleation of the eye; he was engaged in ship building. A bolt had been knocked off and struck the lower lid, puncturing it and making a very large opening in the sclerotic, almost as large as in the boy's eye. It was one of those injuries in which it seemed as if the whole eye had escaped. The eye seemed almost collapsed. The patient was very anxious to save the eye if possible, and following the experience I had with this boy, I adopted the same line of treatment and used the eserine. This case ran

along to almost uninterrupted recovery. I am certain that two or three times in my life I have removed eyes with similiar injuries while in these cases I have, so far, had no bad results. The same thing is true with regard to injuries of the cornea. If it does involve the ciliary region to any great extent, we can often save the eye where we are confident there is no foreign body and with the means we now have. In most of these penetrating wounds, in these large manufacturing centers, the foreign body is a piece of steel or iron and by the use of the magnet we can often exclude the foreign body in the eye. I think we should make an effort to preserve some of these eyes that formerly we should have removed.

Dr. Briggs.—In my earlier experience I neglected eyes that I at present would treat, conservatively however. In case of prolapse of the iris, if I saw it when the iris could be returned I would certainly return it. I believe the danger in those cases is from infection, and the danger of infection is greater if the iris remains prolapsed than if returned. If I could not return it without too much violence to the iris, if it were not prolapsed to a considerable extent, I should use the galvano-cautery. In that way, I believe the danger of infection is lessened. In regard to the treatment of penetrating wounds, I think we are all becoming more conservative. Often we can preserve eyes from which we can extract foreign bodies, especially a piece of steel, with perfect vision. I have several such cases with almost perfect vision from which I have extracted pieces of steel, and in some of those cases, I have either excised pieces of iris or returned the prolapsed iris.

Dr. Scott.—Mr. President, the trouble I have had with prolapsed iris has not been so much sympathetic ophthalmia, as I have had four cases of of severe ophthalmia. One a case which had prolapsed iris. I desired to remove the prolapsed piece and they would not consent to it. All these cases of injury about the ciliary region have been a source of great anxiety to

me, and especially when the wound has healed and there is a contraction of a scar. I have seen few of these cases that have not been followed sooner or later by sympathetic trouble, and ultimately require enucleation.

Lately I had a very interesting case of injury; a man found a railroad torpedo and burst it open. It exploded and a piece of it went into his eye. I removed the prolapsed iris, and the lens seemed to be transparent. There was considerable hemorrhage and I questioned whether the piece had gone into the eye. I kept him under observation two or three weeks, and finally the eye-ball commenced to shrink. I advised him to have enucleation, and removed his eye a few days before I came away, and found that a foreign body had passed completely through the eye and lodged opposite the optic nerve, passing through the posterior part of the eye in contact with the optic nerve, so that when I came to cut through the optic nerve I found there was a foreign body to cut through. This piece was twice as large as a grain of wheat. I do not understand how that could pass through the lens and the ciliary region and the lens remain perfectly transparent, three weeks after the accident.

My experience in all injuries of the eyes is that injuries in the ciliary region are much more serious than in any other. Also, I believe it is better where we have prolapsed iris, unless we can easily reduce it, to remove it.

Dr. H. H. Weer.—Mr. Chairman: I recently had a case of a man attempting to drive a nail. The nail flew up and struck him across the ciliary region, curving through the cornea downward and outward. The aqueous humor at once discharged. He had to take hold of the nail with his fingers and pull it out of his eye. He then hunted for the nail in the dark, found it, drove it into the board, went into the house and retired. He suffered no inconvenience. Next morning he went to the nearest physician, who put him in his carriage and brought him to me. I saw that there had been a complete opening into the

anterior chamber. There was hemorrhage in the anterior chamber. Fortunately the wound closed and the aqueous humor reformed. Having been taught by Dr. Rosie, an injury across the ciliary region, denominated by him "the danger line," to call for immediate enucleation, I used 4 per cent solution of atropia in order to save my iris. When I next saw the patient I noticed that there was discoloration of the lens. The lens was in the anterior chamber. I made preparation for enucleation, when they came again. I found that the crystalline lens had retired from the aqueous chamber and out of sight. I was also met with a flat refusal to enucleate the eye. The case in my estimation was one of ocular anesthesia. That man never had a particle of pain. There was a greenish tinge to the iris. I repeatedly asked him if he had pain, any neuralgia of the forehead, nasal, temporal or molar, and I failed to get any indication of pain. I had the patient still under observation and the question in my mind was the crystalline lens having retired within the vitreous chamber, whether or not it would be safe for me to attempt to take out that crystalline lens, running the risk of losing the vitreous, or whether I had better enucleate or await developments. I am still awaiting some symptom of danger. I still have the chance to take the alarm at the earliest moment. If the alarming symptom comes I can then enucleate at once. I merely wish to put myself on record as being one in favor of conservative surgery in injuries to the eye-ball.

Dr. L. R. Ryan.—I can recall a case that occurred a few months ago. A man was chopping a piece of wood and a splinter produced an injury to the cornea that prolapsed the iris. The prolapse was returned and by the use of eserin for several weeks the wound healed kindly and there were no symptoms of inflammation. I had two or three other cases treated in the same way, and it seems to me that eserin has a more important place in the treatment of the eyes than we attribute to it. It prevents the tendency to glaucoma, which is apt to follow any inflamma-

tion of the iris where we use atropin alone. If we would confine ourselves to eserin in connection with atropin in iritis, or inflammation of the iris from disease, our results would be far better than they are at present. That has been my experience in the last two years.

Dr. Taylor.—Mr. Chairman, I read my paper most hurriedly from the fact that there are several papers to read yet. It will not take a long time to discuss it. I do not wish to make light of the danger which every injured eye has; the danger from sympathetic ophthalmia. That is the danger, and yet if we keep that eye under observation we are ready at any time it becomes necessary to treat it. Often-times our patients leave us and we fail to see them in time and it becomes too late. I recall to my mind one case of injury to the cornea, not apparently a very serious injury. The patient was doing, as I thought, well. It was a case in which there was no pain, and so the patient who thought she was doing well enough staid away. She came back in two or three weeks, and I found sympathetic ophthalmia had developed in the other eye and advised enucleation. The patient said: "No, I would rather be blind than have my eye taken out." She would not have it taken out and she is totally blind to-day in both eyes. And yet, the case was not one in the first place that any one would have thought of enucleating. It was a case of neglect, not neglect on the part of the doctor, because he had no chance to see the case, as the patient did not come back.

I merely wanted to call attention in the paper to the fact that, as it was said by our chairman, I believe many eyes are enucleated which might be saved, keeping in mind the serious dangers in cases like those Dr. Scott has mentioned. If a foreign body remains in the eye, the eye must come out sooner or later, but if we are sure the foreign body is out, then I believe we should wait a reasonable time unless the eye is injured to such an extent that it is hopeless.

RELATIONSHIP OF OPTIC ATROPHY TO LOCOMOTOR ATAXY.

By H. I. JONES, M.D. L.R.C.P.E.

Member American Medical Association, California State Medical Society and San Francisco County Medical Society.

I desire to point out the special features of the relationship of the optic atrophy to ataxy, and have a case to demonstrate my topic:

J. W. H., aged 27, native of the United States. Past history: He has suffered for the last five years from rheumatic pains in various parts of his body, and from nervous twitching, lightning pain in leg, trunk and arms. No history of syphilis. He has used tobacco and stimulants freely. About a year ago he was advised to go to Paso Robles Springs, and use the mud baths for his rheumatic pains; no relief was obtained; a few weeks after his return he complained of defective vision, first of the left eye then the right. January 31, 1894, when he first came under my care, I found that he was totally blind and suffering from a rapid nystagmus, and lightning pain in both legs. Ophthalmic examination showed atrophy of both optic discs; owing to the rapid movement of the nystagmus it was very difficult to make a thorough examination of the fundus. Physically he is in perfect health. He has Westphal's symptom, absence of the knee reflex, but lacks the tabes gait; he tells me that his gait has always been normal. Many patients see no relation between their pains and their amaurosis or ataxy, especially if these pains come on, as in this case years before. He has Argyle Robertson symptoms. Under treatment he has made slight improvement. Nystagmus is less, he can see shadows in my office; for instance he pointed out a picture frame in my consulting room. To test him and to show that it was not visionary, I requested him to walk up to the picture and place his hand on the left hand side of the picture, which he did. Treatment has been both local and constitutional. Locally, blisters to the cervico-dorsal region, leeches to the

temple, cautery of the spine, galvanic and faradic currents. Internally, strychnia sulph. hypodermically, and by the stomach arsenite of strychnia, pilocarpin, iodid of potassium and proto-iodid of mercury.

There are few diseases which present such a multiplicity of symptoms as are found in the locomotor ataxy. This patient was totally blind when he came to consult me, so I could not test his field of vision, which is a very significant symptom in cases of atrophy in tabes. There is an intimate correspondence between the development and functions of the brain and those of the optic nerve and retina; the connection is still increased by the communication which exists between the lymph spaces of the eye and those of the brain and spinal cord. These anatomic conditions not only account for the occurrence of neuro-retinitis and other ocular changes in disease and injury of the spinal cord, but a Polish physician has traced a connection between errors of refraction and curvature of the spine. The eye is not a separate autonomous organ, living as it were a life apart, nor is it a mere appendage or accessory, convenient and advantageous to the rest of the organism; on the contrary it is in closest relationship with the rest of the body, and participates in its moods. Erb tells us that a brisk cutaneous irritation causes the pupil to enlarge; pinching a comatose man will often enlarge the pupil, but the pupil in tabes is not affected by such procedure.

In all cases of atrophy of the optic nerve we should inquire for lightning pains, test the knee reflex, whether gait is normal or not. The pains are often the bridging symptoms betwixt so-called uncomplicated amaurosis and tabes. Charcot and others attribute the cause of optic atrophy to gray degeneration and to be parenchymatous. The eye-ball and its appendages draw their blood supply from two main sources, the internal and external carotid arteries. By means of the blood vessels and the fluid which circulates within them, foreign or other

morbific material may be carried along the blood current into the eye.

The eye and its appendages receive the whole or part of six of the cranial nerves, as well as many fibers of the sympathetic nerve which influences the nutrition of the eye, controlling the size of the blood vessels, and regulating the size, equality and mobility of the pupil. That a certain portion of the spinal cord exercises a direct influence on the eyes has been incontestably established by experiments of modern physiologists. Brown-Sequard demonstrated that the filaments of the sympathetic that supply the eye take their origin from that part of the spinal cord which is contiguous to the origin of the first pain of dorsal nerves, and that portion of the spinal axis which extends from the fifth cervical to the tenth dorsal vertebra possesses a distinct influence on the organ of vision, and has been termed by physiologists, "cilio-spinal" and sometimes "oculo-spinal." The conclusion that must necessarily be deducted from these observations is that the portion of the spinal cord, "oculo-spinal axis," includes within itself both vasomotor and oculo-pupillary filaments; which are connected with the cervical portion of the sympathetic. It is not surprising, therefore, that the eye is very susceptible to all those influences, healthy and morbid, which affect the nervous system generally, or the special innervating apparatus of the eye, either at the center, the periphery or in any part of its course. The special feature in this case is the absence of the gait.

DISCUSSION.

Dr. Young, Burlington, Iowa—Some years ago, we had an interesting paper on myopia. At that time I had an illustrative case, and can now recall five cases which might be considered under this head. I want to give the Section, briefly, some peculiarities observed in five cases. Two were cases in which rapid optic nerve atrophy came on, and they went blind in a very short time. In those cases there was absence of the reflex

and some of the other symptoms of dorsalis, but we could never make out a plain case. A few other cases of unmistakable dorsalis have come under my care and observation. Typical cases have had no eye symtoms whatever. The fifth case had typical dorsalis as the result of an injury, and had rapid, progressive optic atrophy and became entirely blind. The question arises, Should we not make a better classification of dorsalis in connection with eye symptoms than we have at present? Are we to expect in all cases our visionary image of cases? I think not. My observation would be like this: Where we get typical dorsalis as the result of direct injury, traumatism, I should look for it. In pure asthenopic dorsalis where the symptoms come on with staggering gait, pains, etc., I have come to the conclusion that we can correct it very often.

A NEW AND CONVENIENT ARRAGEMENT OF ROTARY PRISMS.

By EDWARD J. BROWN, A.M., M.D., Minneapolis, Minn.

After much suffering from heterophoria and more or less satisfactory effort to relieve such trouble in myself and others, I hailed the paper of Dr. Geo. M. Gould as a ray of genuine daylight, and at once put his theories to the test. The results in my own and a good number of other cases have been highly satisfactory.

As a means of carrying out the Gould exercises, I found the prismatic arrangements at my command very cumbersome and unsatisfactory. Dr. Gould's double battery of forty prisms seemed altogether too unwieldy for convenient use. It at once occurred to me that an arrangement of rotary prisms, like Stevens phorometer, except that they should revolve in opposite directions, would answer the indications perfectly. With the assistance of Mr. Carl Thayer, a local jeweler, I have constructed

an instrument which I find very useful. It consists of two 30 degree prisms mounted on two clock wheels, geared together so as to rotate in opposite directions, on a brass plate. The prisms are rotated by a handle firmly attached to one wheel, and a pointer and scale indicate at a glance the power of abduction and adduction in a given case, with a range from 0 to 60 degrees.

By a simple arrangement one prism may be disconnected from the other, and revolved alone for the purpose of measuring the strength of, or exercising, the vertical muscles. A clip might be easily added to hold a third prism base up or down, but I find it better in practice to use neither device, but to exercise the vertical muscles by slightly revolving the instrument in abduction or adduction in the horizontal plane, by means of a narrow vertical crossbar which serves as a means of suspension above and a firm handle below. The whole is suspended from a swinging arm, and by means of a simple automatic clamp easily placed at the height of the patient's eyes. It might equally well be swung from the ceiling with a weight and pulley. The instrument serves perfectly its purpose whether we choose Gould's system of over-weighting the muscle, or Savage's rhythmical exercise.

I find in practice the best plan to be a modification combining the advantages of each, *i.e.*, rotating the prisms slowly up to and beyond the patient's power to fuse, when he closes his eyes for a few seconds and the prisms are again placed at zero.

In some cases this over-weighting, even for once or twice will cause a severe headache, and there is consequently need of a wise discretion in its use. This is especially true of forced adduction, or sursumduction with the *rotary* prisms, since the unbroken and gradual increase of prismatic strength adds decidedly to the ability to overcome the prisms.

Gould advises the use of his method in accommodation. A

decided advantage of the rotary prisms is that in most cases sufficient strain can be put upon the muscles at twenty feet. A further advantage is the low cost of the instrument, which ought not to exceed $10.

As regards results I will only mention two out of many cases. In one, after several months ineffectual use of rhythmical exercise, adduction was brought by Gould's method and rotary prisms from 6 degrees to 80 degrees in four weeks; and in a second, adduction of 10 degrees was brought to 70 degrees in two weeks, the patient having no other than a few moments exercise daily at my office.—*The Journal.*

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Metamorphopsia.

It will be both interesting and profitable for numerous observers to study this question from a clinical standpoint, and then make public the results of these studies. We desire to publish a symposium on metamorphopsia as observed by astigmatics and caused by the wearing of correcting cylinders. The character of the metamorphosia should be noted. Does the floor incline from or towards the patient, or to the right or left? What shape is given to a rectangle? What the duration of the metamorphopsia in each case? Give the relationship of the meridians of greatest curvature, whether converging or diverging above, or parallel, in all cases troubled by the metamorphopsia. Note the character of cases in whom the cylinders produce no change of form; and give the relationship of the meridians of greatest curvature in these cases.

Each observer can determine the number of cases to be studied before making his report, and can close his report by giving his own theoretical views.

We desire to publish this symposium in an early issue of vol. V.

Why The Practice?

While standing by Mr. Nettleship's desk, in the Royal Ophthalmic Hospital, one year ago, a woman presented herself complaining that her glasses, given her a few days before, gave her no comfort. The note made of her refraction showed that she had compound hyperopic astigmatism and that the meridian of greatest curvature for the right eye was at 70°, and for the left, at 80°. The note showed that the axis of the cylinder had been placed at 90° for each eye. I ventured to ask Mr. Nettleship why this was done. His reply was that they had fallen into the habit of placing the axes of the cylinders at 90° when the test showed the location of the best meridians near the vertical, and for no other reason than that many patients were made more comfortable by this change. I stated to him that this patient could never use her cylinders comfortably thus placed. I further stated that if the two cylinders for this case were placed at 75° there would be some promise of comfort. He asked the reason for my statement. I gave it, in substance; you may find it in full by referring to No. 10 of the current volume of the RECORD, pages 376 to 389.

Volume IV.

With this number, vol. IV of the RECORD ends. The judgment of the reader has been made as to the matter that has appeared from time to time. Some of the contents may not have been of any service to one individual and yet helpful to another. Altogether, we think our readers will agree that at least value received has been given. We ourselves have learned much from our contributors. Pagenstecher's advice as to the operation for secondary cataract has no doubt been put to the practical test by many operators, and has been pronounced good.

If you over-looked this point in his paper, it will pay to re-read it.

Mules' treatment of corneal ulsers by means of discs of iodoform, boric acid and gelatin was first brought to the attention of many of our readers by a little paragraph in the RECORD. Those who have availed themselves of this new treatment cannot be other than pleased.

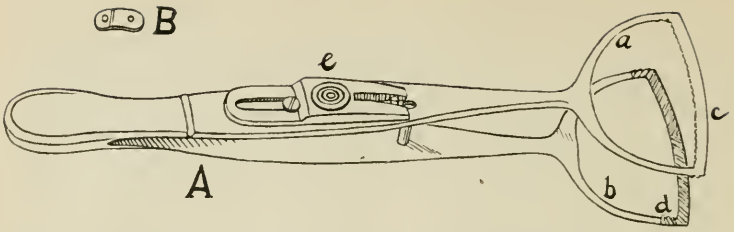
Many other points might be mentioned to show that vol. IV of the RECORD has maintained its reputation for giving out thoughts of a highly practical nature. We propose continuing this good work into and through

Volume V,

Which begins with the next issue. Thanking our contributors, subscribers, and advertisers for their help in the past, we will enter on the work of editing and publishing the new volume with the hope that our cordial relationship may continue, and that all of us together may make volume V. of greater service than any of the preceding volumes. We now promise our contributors that they will have as many readers in this and other countries, as they would have if they were to choose some other special journal as a medium of communication; we promise our subscribers, new and old, that they shall have value received, at least—we believe they will realize this many times repeated. We would state to our advertisers that the very fact that their ads. appear in our pages is an endorsement of their wares, for every year we decline to admit to our advertising pages matter of a doubtful nature. We trust they have been benefited by having given us their patronage, and that they may find it to their interest to continue with us through another volume.

Entropion Forceps and Suture Plate.

The cut on page 474 shows a most useful instument (A) and a very practical and helpful appliance (B). Each blade of the forceps terminates in a stirrup-shaped extremity, the foot of each being slightly curved on the flat, so as to confrom to the shape of the lid. From the foot, a shoulder one sixth inch long extends up each arm, the purpose of which is to tightly compress the lid-



margin when the forceps are made to grasp the lid. The lower blade of the forceps is placed beneath the lid and the upper blade is placed on the skin-surface, enough of the lid being included to allow about one sixth inch of the free margin to be included in the fenestrum. By means of the sliding clamp (e) the blades are made to grasp the lid firmly. By this means the lid is easily everted and held in position for making the Burow incision, and the vertical cuts, the former to widen the lid, the latter to lengthen, it and the two together insuring the out-turning of the included margin. The advantage claimed for the forceps shown in the cut is at least twofold: first, the fenestrum in the outer blade makes it almost certain that in making the Burow incision and the vertical cuts, the skin will not be incised or punctured as would likely occur if this blade were solid; second, the properly regulated pressure entirely prevents bleeding while the operation is being done.

The suture plate, as modified by Dr. Geo. H. Price, is invaluable in muscle advancements and muscle shortening. After the stitch has been taken, the two ends of the thread are passed through the holes in the plate and the knot is tied over it, the concave surface resting on the globe. On the fifth day the suture can be readily cut on one side of the knot, passing the blade of the scissors along the transverse groove, and as easily removed.

These devices can be obtained of Theo. Tafel, of this city, whose advertisement can be found on third page of the cover of this issue.

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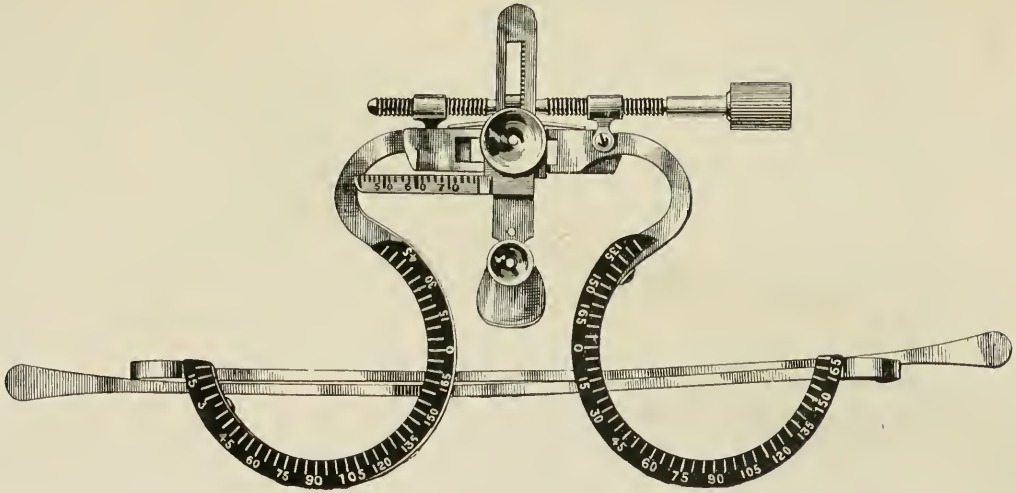

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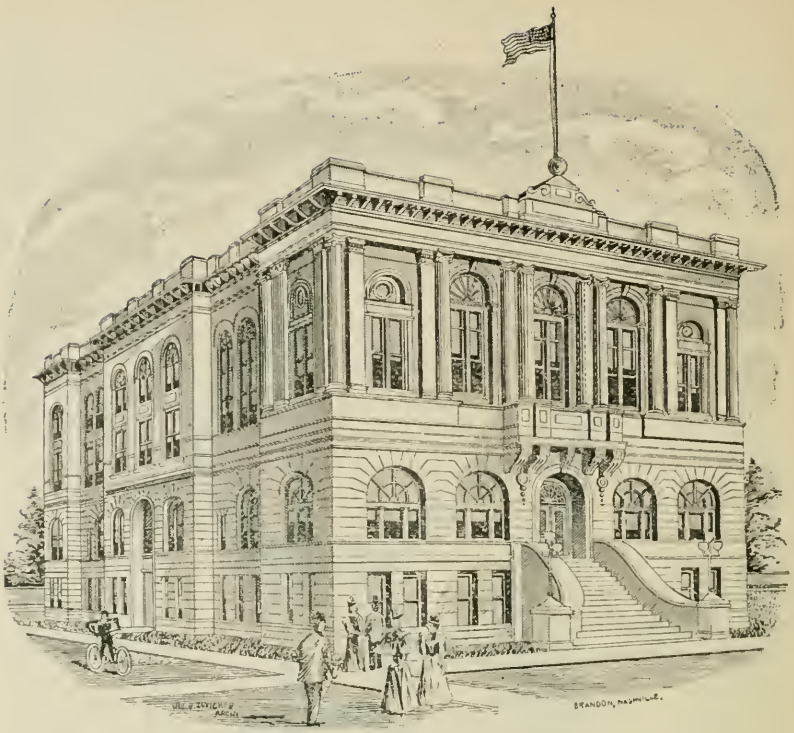

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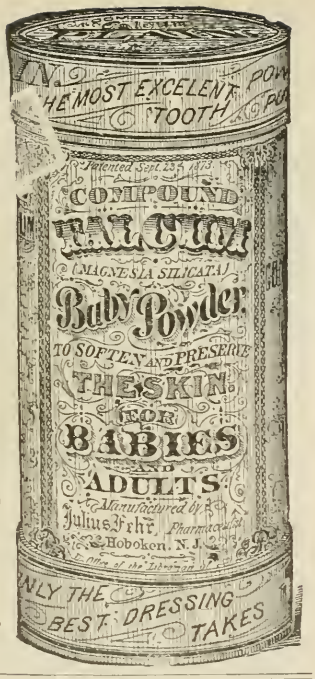

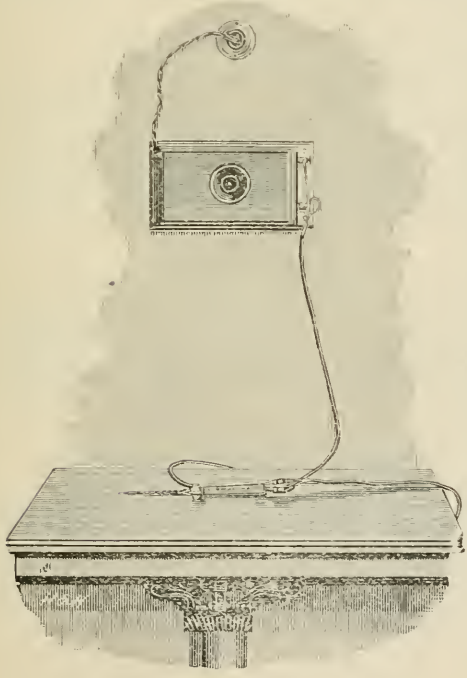

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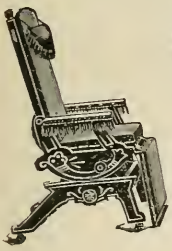

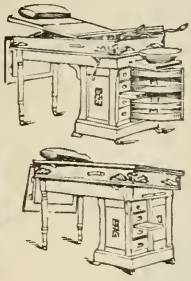

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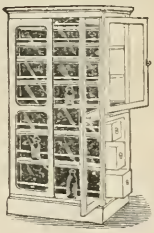

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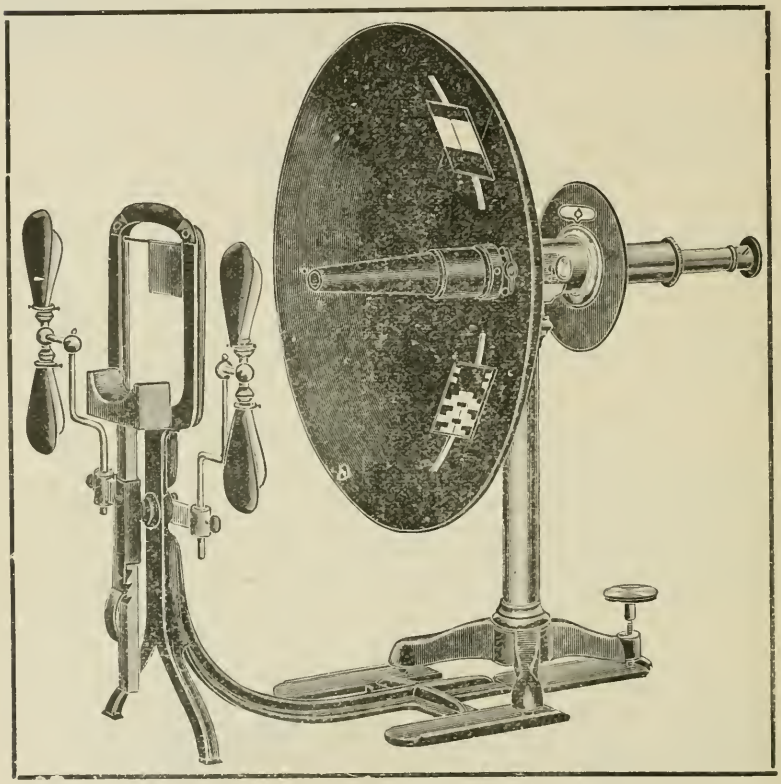

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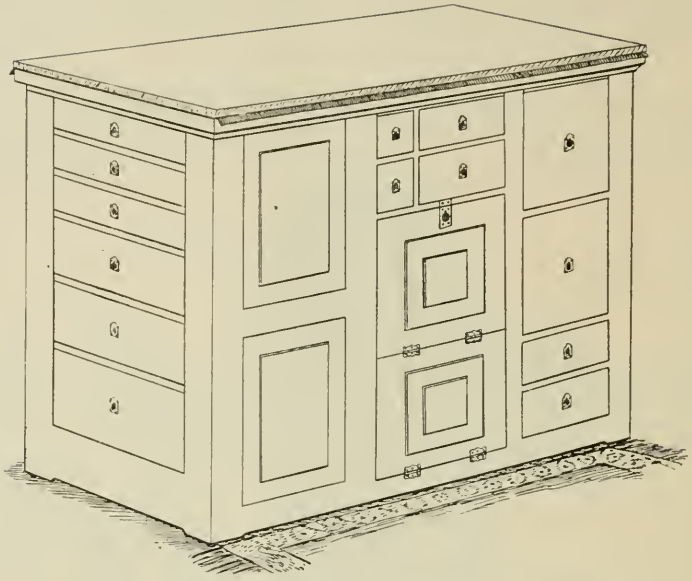

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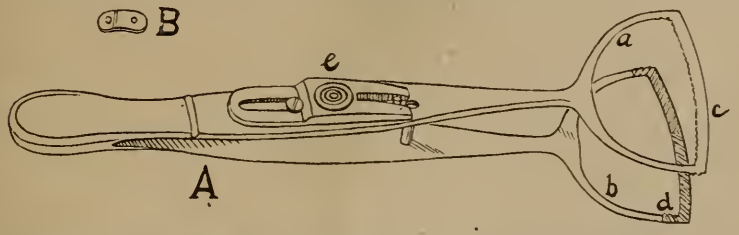

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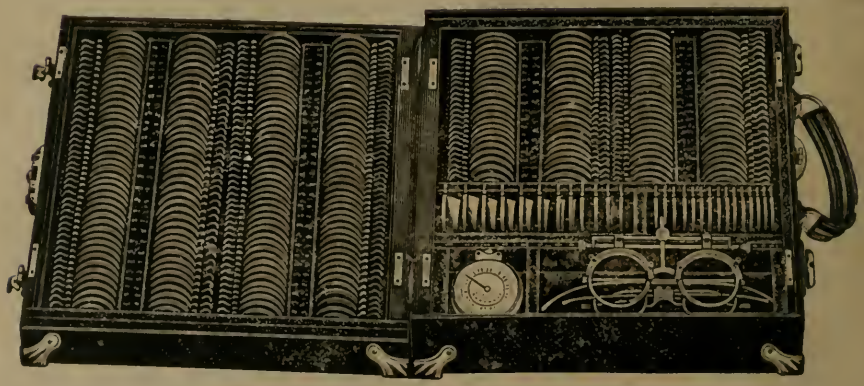

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